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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/549,543	09/19/2005	Francois Lhermite	ONS00541	1655
27255 7590 12/06/2007 SEMICONDUCTOR COMPONENTS INDUSTRIES, LLC ATTN: ROBERT D. ATKINS/LAW DEPT./MD 1700 P.O. BOX 62890 PHOENIX, AZ 85082-2890				
EXAMINER				
MOFFAT, JONATHAN				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/549,543

Applicant(s)

LHERMITE ET AL.

Examiner

Jonathan Moffat

Art Unit

2863

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 November 2007.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 September 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

Applicant's amendments to the claims, filed 11/13/2007, are accepted and appreciated by the examiner. In response the examiner has removed all objections to the claims and replaced them with rejections under 35 USC 112 as indicated by the applicant. Therefore, this action is hereby made **non-final**.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

1.

Claims 3, 6, 8-10, 16 and 18-20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

With respect to claims 3, 6, 9-10 and 16 and as stated in the previous office action, the examiner is not certain how or why the feedback voltage signal is added to the input power signal. *The examiner further maintains that the specification provides insufficient support as to how or why one of ordinary skill in the art would use the claimed invention.* At first glance it would appear that, at the least, the units would be incorrect in such an addition. Figure 2 shows an adding component (92) but the power signal is not connected as an input nor is the feedback voltage signal. Further clarification is requested.

Claims 8 and 20 are also unclear. The claim discusses dividing an input power signal by the voltage feedback signal. Although this may be a valid calculation (resulting in a signal with units of current) *the examiner cannot ascertain how one of ordinary skill in the art would employ this feature in applicant's invention*. Figure 2 shows a dividing component (94) with the input power as one input. However, the other input is not the feedback voltage but an error signal generated by comparing the feedback voltage to a reference voltage. Though this is known in the art, it does not appear to match up. Further clarification is requested.

Claims 18-19 are likewise unclear. The claims discuss comparing the input power signal to the feedback voltage. As stated above, this does not appear in the drawings and the examiner is uncertain as to how *one of ordinary skill in the art would utilize this concept in applicant's invention*. At first glance it would appear that, at the least, the units would be incorrect in such a comparison.

Further, claim 6 appears to be patently indistinguishable in scope from claim 9. As applicant has indicated in the response of 11/13/2007, claim 9 includes the language "to form a power feedback control signal" which is absent from claim 6. However, this language merely assigns a designation to a calculated value which is also calculated in claim 6. It appears to the examiner that both of these claims, in a simplified form, are adding together signals "A" and "B". Claim 9 labels this sum "C". However, the sum of claim 6 is identical to that of claim 9 despite being "unlabeled". Patentably, these claims are indistinct and therefore redundant.

The examiner's interpretations of these claims and these rejections are discussed further in response to applicant's arguments below.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2.

Claims 1-2, 5, 7, 11 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brown (US pat 5481730) hereafter referred to as "Brown ('730)" in view of Brown (US pat 5726901) hereafter referred to as "Brown ('901)".

With respect to claim 1, Brown ('730) discloses a method comprising:

1) Determining an input voltage and current of a power supply system (column 1 lines 48-53 and column 2 lines 24-27 and 45-55).

2) Using the input voltage and current to regulate an output voltage of the power supply system to a desired value (column 1 lines 56-63 and column 2 lines 45-55).

With respect to claim 2, Brown ('730) discloses that PWM signals may be used to control a power switch of a power supply (column 5 lines 5-29) though this is not the preferred embodiment it would have been obvious to one of ordinary skill in the art.

With respect to claim 5, Brown ('730) discloses a method comprising:

1) Coupling the power supply controller to receive a first signal representative of an input voltage and a second signal representative of an input current (column 1 lines 48-53 and column 2 lines 24-27 and 45-55).

2) Coupling the power supply controller to receive a feedback signal representative of an output voltage (column 1 lines 48-53, column 2 lines 43-45 and column 3 lines 30-47 and column 4 lines 56-67).

3) Coupling the power supply controller to form drive pulses to regulate the output voltage responsively to the power signal and the feedback signal (column 1 lines 56-63 and column 5 lines 5-29).

With respect to claim 11, Brown ('730) discloses coupling the power supply controller to regulate the output voltage to a desired value (column 1 lines 56-63 and column 5 lines 5-29). Although Brown ('730) does not disclose a specific accuracy, one of ordinary skill in the art would be aware that it is desirable to increase the accuracy of such a regulation and that the intention is normally for the accuracy to be 0% error. Further, Brown ('730) discloses one embodiment as being an emergency shutdown (0V and 0A). It can be reasonably assumed that this device, when shutting down the output, is within 10% of 0V.

With respect to claim 15, Brown ('730) discloses an apparatus comprising:

1) A component coupled to receive a voltage representative of an input voltage and receive a current sense signal representative of an input current (column 1 lines 48-53 and column 2 lines 24-27 and 45-55).

2) A PWM controller of the power supply controller coupled to form drive pulses to regulate an output voltage (column 5 lines 5-29).

3) An error block of the power supply controller coupled to receive the power signal, a feedback signal, and the current sense signal and responsively control the PWM controller to

Art Unit: 2863

form the drive pulses (column 1 lines 56-63 and column 3 lines 30-47 and column 4 lines 56-67 and column 5 lines 5-29).

With respect to claims 1, 5, 7 and 15 Brown ('730) fails to specify that the power input is determined as a product of input current and input voltage. The examiner believes that, to one of ordinary skill in the art, it would have been obvious to multiply these input values together to get the input power and that it would have required no more than routine skill in the art. However, as additional evidence, the examiner relies upon a secondary reference.

Brown ('901) teaches, with respect to claims 1, 5, 7 and 15, monitoring input power to a power supply system (Fig 1) by multiplying input voltage and input current with a multiplier (Fig 1 "multiplier").

As stated above, the examiner believes that multiplying current and voltage to determine power would have been obvious to one of ordinary skill in the art based upon Brown ('730) alone. However, it further would have been obvious to one of ordinary skill in the art to combine Brown ('730) with the teachings of Brown ('901) by doing so. This is a well-known method of determining input power, which is useful for determining consumption by the device, efficiency of the supply, and other characteristics

3.

Claims 4, 12 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brown ('730) and Brown ('901) as applied to claims 1, 5 and 15 above, and further in view of Stitch (US pat 5315533).

With respect to claims 4, 12 and 17, Brown ('730) and Brown ('910) fail to disclose brown-out detection and protection.

Stitch teaches, with respect to claims 4, 12 and 17, brown-out detection and protection (abstract and column 4 lines 8-23).

It would have been obvious to one of ordinary skill in the art to modify the method and apparatus of Brown and Brown by utilizing it for assured power delivery (brown-out prevention) as taught by Stitch. The “uninterruptible” power supply of Stitch is a common method of protecting computer resources (Stitch column 1 lines 20-40) such as that of Brown ('730) as shown in Figure 1.

4.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brown ('730) and Brown ('901) as applied to claim 5 above, and further in view of Hall (US pat 5502370).

With respect to claim 14, Brown ('730) and Brown ('910) fail to disclose keeping the input power constant in an overload condition.

Hall teaches, with respect to claim 14, coupling the power supply controller to maintain input power substantially constant during an overload condition (abstract and column 1 lines 22-32).

It would have been obvious to one of ordinary skill in the art to modify the method and apparatus of Brown and Brown by monitoring and preventing power supply spikes by regulating the input power as taught by Hall. This is beneficial according to Hall (column 1 lines 33-45) and additionally for preventing damage to the system due to power surge.

5.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brown ('730) and Brown ('901) as applied to claim 5 above, and further in view of Kinghorn (US pat pub 20020071301).

With respect to claim 13, Brown ('730) and Brown ('901) fail to disclose generating a haversine form control signal.

Kinghorn teaches, with respect to claim 13, generating a haversine form control waveform (paragraphs 0048, 0052, 0074).

It would have been obvious to one of ordinary skill in the art to modify the method of Brown ('730) and Brown ('901) by using a haversine waveform as taught by Kinghorn. The use of a lookup table is a fast way of determining an output value. Further, this insures unity of phase between the input and output signals and reduces required components (Kinghorn paragraph 0074).

Response to Arguments

Applicant's arguments filed 11/13/2007 have been fully considered but they are not persuasive.

First, the examiner apologizes for erroneously omitting an analysis of claim 20 in the office action of 8/31/2007. This has been remedied in the present office action.

With respect to the claims now rejected under 35 USC 112 above, the examiner maintains that the disclosure is not sufficient to allow one of ordinary skill in the art to make and use the claimed invention. As stated above, one of ordinary skill in the art would not understand how to utilize a feedback voltage signal added to an input power signal. It appears that the units

in such an equation would be incorrect which would naturally confuse one of ordinary skill in the art. The specification does not clarify how or why such a value or calculation is used and, as stated above, the drawings do not appear to support such a limitation. In the response of 11/13/2007, the applicant cited portions of the specification (page 6 line 20 through page 7 line 18) to remedy this confusion. Upon further study, it does not appear to the examiner that these sections are directed to this calculation at all and further, that no section sufficiently explains the subject matter of the claims above rejected under 35 USC 112.

The same is true of dividing the input power by the error feedback signal as in at least claims 8 and 20. Although this appears in the drawings, one of ordinary skill in the art would not have sufficient support from the specification to derive any use from this value.

On pages 12-13 of the response, applicant addresses the rejection of claims as obvious in over Brown ('730) in view of Brown ('901).

Applicant argues that, firstly there is no motivation to combine these references, specifically because the '730 reference does not specifically cite such motivation. The examiner points out that such explicit teaching in the reference is not necessary to show obviousness. The requirement is that the invention as a whole would have been obvious to one of ordinary skill in the art apprised of all prior art, not just based upon the references themselves. As stated in the rejection, the examiner believes that one of ordinary skill in the art would find the multiplication of input current and voltage routine for determining input power and further that one of ordinary skill in the power supply arts would understand how to utilize this value.

Applicant further argues that teaching reference '901 does not disclose the calculation of input power for regulation of output voltage. The examiner disagrees with this statement.

Looking to the abstract of this reference, taught is " An analog multiplier is connected for receiving and computing the product of the voltage and current signals, and for generating a power signal indicative of the product of the voltage and current signals..." Figure 3 further shows that this power is used to generate a primary energy signal which certainly comprises controlling the power levels.

Finally, applicant argues that reference '730 fails to disclose using a calculated power to control a PWM device. The examiner agrees with this statement but points out that it is moot as the '730 reference was only relied upon to disclose a controlled PWM device. Only in combination with the teaching reference '901 is the claim rendered obvious. In combination, the teaching reference shows that one of ordinary skill in the art would know to use a product of voltage and current to regulate the supplied power. The base reference shows that one way to regulate power is through a regulated PWM signal. In combination, one of ordinary skill in the art would understand that a power signal may be used to regulate the PWM.

Art Unit: 2863

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Due to the confusion in claim interpretation concerning claims 3, 6, 8-10, 16 and 18-19, the examiner presents the following prior art as what is believed to be along the line of applicant's intentions:

Jonker (US pat pub 20030014200) provides for constant voltage output regulation with brownout and other irregularity compensation via voltage output feedback.


Liu (US pat 6574124) uses a feedback voltage compared to a reference voltage forming an error signal via comparator. This is then used to determine the required inputs to regulate the voltage output.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Moffat whose telephone number is (571) 272-2255. The examiner can normally be reached on Mon-Fri, from 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on (571) 272-2269. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

11/27/07
JM 


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